

Appendix XX

Supplemental Information for USACE Permitting Requirements

I. Purpose of Appendix XX

The purpose of this appendix is to provide an overview of the material needed to complete the environmental review for the Corps' permitting process under the authority of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act and to document at what stage material will be available and presented. (See Section II below.)

Additionally, the appendix will provide specific environmental review information in Section III below for Alternative 4A regarding impacts to waters of the United States, a conceptual description of compensatory mitigation, and compliance with Section 106 of the National Historic Preservation Act, Section 10 of the Rivers and Harbor Act, and Section 14 of the Rivers and Harbors Act (codified in 33 USC 408 and commonly referred to as "Section 408").

The following additional information has been covered within the text of the SEIS/REIR: a Purpose and Need Statement reflecting the role of the Corps in its CWA Section 404, Rivers and Harbors Act, and Section 408 responsibilities; impacts to waters carried through to all alternatives; effects on navigation carried through to all alternatives; and a conceptual compensatory mitigation description for all alternatives.

II. Permitting Decision Needs

Information addressed in Supplemental EIS/Recirculated EIR

Information needed by the Corps which will be addressed in the Supplemental EIS/Recirculated EIR and which will be used in support of decision making under CWA Section 404 and Rivers and Harbors Act Section 10 is listed below:

- Clean Water Act Section 404
 - Impacts to "waters of the United States"
 - Conceptual Description of Mitigation for Impacts
 - Section 106 of the National Historic Preservation Act
- Rivers and Harbors Act
 - Potential effects to navigation
- Section 408 Permission

This information is provided within the SEIS/REIR and within this appendix.

The level of detail for potential navigation impacts required under NEPA is not as detailed as that which could be required for either Rivers and Harbors Section 10 permitting or Section 408 permission. Should additional information be required for Section 10, further navigational information shall be provided to the Corps prior to permit issuance. It is expected that further information will be required for Section 408 permission. The detail associated with obtaining those permissions will be generated during the development of design detail and will be submitted to the Corps as it becomes available.

Information addressed prior to ROD

In March of 2013, Sacramento District developed a white paper entitled “BDCP: Permit Application Approach for CM-1” (the “White Paper”). Based on the White Paper, the District envisions two separate RODs. First, the Corps will “adopt the EIS” and issue a ROD generally accepting the use of the Bureau’s FEIS for future permit decisions at the point that the Bureau of Reclamation issues its ROD for the Supplemental FEIS/EIS. The Corps can file its ROD at least 30 Days after Bureau of Reclamation files the FEIS with EPA; preferably concurrent with or after BOR files its ROD. Second, the Corps will issue a ROD or RODs at the time that “phased” permits are issued. These statements assume that the Recirculated Supplemental DEIS properly describes the conveyance facility at the “project level.”

The information that must be addressed in the CWA Section 404 and RHA Section 10 Record of Decision and in subsequent permits includes:

- Clean Water Act Specific
 - Final Compensatory Mitigation Plan (CWA “Mitigation Rule”)
 - Compliance with the CWA Guidelines (LEDPA, impact minimization, anti-degradation, etc.)
 - Public Interest Review
- Compliance with other Federal Laws
 - FESA
 - Section 106 (NHPA) “Frequently Asked Questions” Q-30 provides that “at the time the final EIS is released, section 7 and section 106 consultations should be completed and the results addressed within the ROD.
 - Executive Orders 11988, 11998 and 11990
 - Clean Air Act General Conformity Rule
 - Magnuson – Stevens Fishery Conservation and Management Act
 - Fish & Wildlife Coordination Act
 - Section 401 Water Quality Certification

This information is currently in development and will be provided to the Corps as part of the Section 404 and Section 10 permit processing. All information shall be presented for Corps review and approval and shall be submitted prior to issuance of the second ROD.

III. Environmental Review

Impacts to Waters of the United States from the Construction of the Conveyance Facility

Alternative 4A includes the construction and operation of water conveyance facilities within, or requiring the unavoidable fill of, waters of the U.S., resulting in the estimated fill of jurisdictional waters as described in table 1 below.

Table 1. Approximate Impact Acreages Associated with the Construction of Alternative 4A

Habitat Type	Permanent Impact	Temporary Impacts Treated as Permanent ¹	Temporary Impact ²
Agricultural Ditch	45	17	0
Alkaline Wetland	20	0	0
Clifton Court Forebay	258	0	1931
Conveyance Channel	8	3	0
Depression	29	7	0
Emergent Wetland	57	32	0
Forest	8	9	0
Lake	23	0	0
Scrub-Shrub	13	5	0
Seasonal Wetland	115	25	0
Tidal Channel	19	81	0
Vernal Pool	0.3	0	0
Total	595.3	179	1931

Impacts are presented as an estimate with the assumption that the delineation, which has been revised based on Corps comment, will be verified with no further changes.

Conceptual Description of Compensatory Mitigation

The environmental consequences of the proposed federal action on wetlands and other aquatic resources are evaluated under the federal Clean Water Act (CWA) (33 U.S.C. 1344) and the CWA regulations, policies and guidelines issued by the U.S. Army Corps of Engineers (Corps) and Environmental Protection Agency (EPA). The CWA prohibits the discharge of dredged or fill materials into wetlands, rivers, streams, and other jurisdictional waters unless a permit issued

¹ Temporary impacts treated as permanent are temporary impacts expected to last over one year. These impact sites will eventually be restored to pre-project conditions; however, due to the duration of effect, compensatory mitigation will be included for these areas.

² Temporary impacts are due to dredging Clifton Court Forebay.

by the Corps authorizes the discharge. Proposed discharges to jurisdictional waters are evaluated by the Corps in accordance with federal regulations, which require every authorized discharge to adhere to a three-step process known as the “mitigation sequence.” Steps one and two seek to avoid and minimize the fill of jurisdictional waters to the extent practicable (40 CFR §230.10(a)). The third step requires appropriate and practicable compensatory mitigation for all unavoidable impacts to jurisdictional waters.

In 2008, the Corps and the EPA issued national regulations, known as the “Mitigation Rule” governing compensatory mitigation for activities authorized by permits issued by the Corps (33 CFR §§325, 332), and in 2015, the Corps’ South Pacific Division issued “Regional Compensatory Mitigation and Monitoring Guidelines (Final January 12, 2015)” (Division Guidelines) to supplement the national Mitigation Rule. Compensatory mitigation under the Mitigation Rule and Division Guidelines fulfill the long standing national goal of replacing the loss of wetland and other aquatic resource acreages and functions, known as the “no net loss” goal (National Wetlands Mitigation Action Plan (December 24, 2002)). To achieve the no net loss goal, the Corps and EPA have concluded that, where appropriate and practicable, compensatory mitigation “should provide, at a minimum one for one functional replacement (i.e., no net loss of values), with an adequate margin of safety.”³ The long-term objective of the no net loss policy is to increase wetland acreages and functions nationally.

The Mitigation Rule defines compensatory mitigation as (1) restoring existing wetlands or reestablishing former wetlands; (2) creating new wetlands in upland areas; (3) enhancing the functional values of degraded wetlands; and (4) preserving wetlands restoration aquatic resources. Restoration is generally the preferable form of compensatory mitigation because the likelihood of success is greater while the impacts to potentially ecologically important uplands are less, as compared to creation. Moreover, the potential gains in terms of aquatic resources functions are oftentimes greater with restoration as compared to enhancement and preservation (33 CFR §332.3(a)(2)). The Mitigation Rule and Division Guidelines stress the benefits of a watershed approach to compensatory mitigation, and compensatory mitigation generally should be located in the same watershed as the impact site, and where it is most likely to successfully replace lost functions and services (33 CFR §332.3; Division Guidelines, §3.2).

Avoidance and Minimization

The design of the project has included the avoidance of impacts to waters of the United States to the greatest extent practicable. Numerous iterations of footprint locations for each of the conveyance components have been evaluated in order to situate work areas in uplands where possible. Once construction begins, further measures will be taken, consistent with the avoidance and minimization measures (AMM) described in Appendix 3.C of the Draft BDCP, in order to further avoid and minimize impacts to waters of the United States as well as to special status species. The AMMs will be implemented at all phases of a project, from siting through design, construction, and on to operations and

³ Memorandum of Agreement between the Environmental Protection Agency and the Department of the Army concerning the Determination of Mitigation under the Clean Water Act Section 404(b)(1) Guidelines, 55 Fed. Reg. 9210, 9212 (1990) (“Mitigation MOA”).

maintenance. The AMMs that pertain specifically to waters of the United States are summarized in the table 2 below.

Table 2. Summary of the Avoidance and Minimization Measures

Number	Title	Summary
AMM1	Worker Awareness Training	Includes procedures and training requirements to educate construction personnel on the types of sensitive resources in the project area, the applicable environmental rules and regulations, and the measures required to avoid and minimize effects on these resources.
AMM2	Construction Best Management Practices and Monitoring	Standard practices and measures that will be implemented prior, during, and after construction to avoid or minimize effects of construction activities on sensitive resources (e.g., species, habitat), and monitoring protocols for verifying the protection provided by the implemented measures.
AMM3	Stormwater Pollution Prevention Plan	Includes measures that will be implemented to minimize pollutants in stormwater discharges during and after construction, and that will be incorporated into a stormwater pollution prevention plan to prevent water quality degradation related to pollutant delivery from project area runoff to receiving waters.
AMM4	Erosion and Sediment Control Plan	Includes measures that will be implemented for ground-disturbing activities to control short-term and long-term erosion and sedimentation effects and to restore soils and vegetation in areas affected by construction activities, and that will be incorporated into plans developed and implemented as part of the National Pollutant Discharge Elimination System permitting process for covered activities.
AMM5	Spill Prevention, Containment, and Countermeasure Plan	Includes measures to prevent and respond to spills of hazardous material that could affect waters of the United States, including navigable waters, as well as emergency notification procedures.
AMM6	Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material	Includes measures for handling, storage, beneficial reuse, and disposal of excavation or dredge spoils and reusable tunnel material, including procedures for the chemical characterization of this material or the decant water to comply with permit requirements, and reducing potential effects on aquatic habitat, as well as specific measures to avoid and minimize effects on species in the areas where reusable tunnel material would be used or disposed.

AMM7	Barge Operations Plan	Includes measures to avoid or minimize effects on aquatic species and habitat related to barge operations, by establishing specific protocols for the operation of all project-related vessels at the construction and/or barge landing sites. Also includes monitoring protocols to verify compliance with the plan and procedures for contingency plans.
AMM10	Restoration of Temporarily Affected Natural Communities	Restore and monitor natural communities in the Plan Area that are temporarily affected by construction activities. Measures will be incorporated into restoration and monitoring plans and will include methods for stockpiling and storing topsoil, restoring soil conditions, and revegetating disturbed areas; schedules for monitoring and maintenance; strategies for adaptive management; reporting requirements; and success criteria.
AMM12	Vernal Pool Crustaceans	Includes provisions to require project design to minimize indirect effects on vernal pool habitat, avoid effects on core recovery areas, minimize ground disturbing activities or alterations to hydrology, conduct protocol-level surveys, and redesign the project to ensure that habitat loss is minimized where practicable.
AMM30	Transmission Line Design and Alignment Guidelines	Design the alignment of proposed transmission lines to minimize impacts on sensitive terrestrial and aquatic habitats when siting poles and towers. Restore disturbed areas to preconstruction conditions.
AMM34	Construction Site Security	Provide all security personnel with environmental training similar to that of onsite construction workers, so that they understand the environmental conditions and issues associated with the various areas for which they are responsible at a given time.
AMM36	Notification of Activities in Waterways	Before in-water construction or maintenance activities begin, notify appropriate agency representatives when these activities could affect water quality or aquatic species.

Minimization and avoidance of habitat for, and impacts to, aquatic species and species which utilize aquatic habitats such as California tiger salamander, giant garter snake, California red legged frog, western pond turtle, riparian woodrat, riparian brush rabbit, Suisun shrew, and salt marsh harvest mouse, will also result in further avoidance and minimization of impacts to waters of the United States.

Wetland Functions

Unavoidable impacts to waters of the United States will be mitigated such that the loss of acreage and functions due to construction activities shall be fully compensated. Wetland functions are defined as a process or series of processes that take place within a wetland. These include the storage of water, transformation of nutrients, growth of living matter, and diversity of wetland plants, and they have value for the wetland itself, for surrounding ecosystems, and for people. Functions can be grouped broadly as habitat, hydrologic, or water quality. Not all wetlands perform all functions nor do they perform all functions equally well. The location and size of a wetland may determine what functions it will perform. For example, the geographic location may determine its habitat functions, and the location of a wetland within a watershed may determine its hydrologic or water-quality functions. Many factors determine how well a wetland will perform these functions: climatic conditions, quantity and quality of water entering the wetland, and disturbances or alteration within the wetland or the surrounding ecosystem. Wetland disturbances may be the result of natural conditions, such as an extended drought, or human activities, such as land clearing, dredging, or the introduction of nonnative species. Wetlands are among the most productive habitats in the world, providing food, water, and shelter for fish, shellfish, birds, and mammals, and serving as a breeding ground and nursery for numerous species. Many endangered plant and animal species are dependent on wetland habitats for their survival. Hydrologic functions are those related to the quantity of water that enters, is stored in, or leaves a wetland. These functions include such factors as the reduction of flow velocity, the role of wetlands as ground-water recharge or discharge areas, and the influence of wetlands on atmospheric processes. Water-quality functions include the trapping of sediment, pollution control, and the biochemical processes that take place as water enters, is stored in, or leaves a wetland.

A functional assessment of wetlands proposed for fill will be conducted during the development of the Conceptual Mitigation Plan as part of the Clean Water Act permitting process. The results of this assessment will be compared to the expected functions at the proposed mitigation site(s) such that it can be confirmed that the compensatory mitigation will in fact accomplish full functional replacement of impacted wetlands.

Compensatory Mitigation

Aside from the habitat which would be created as a result of the Environmental Commitments, compensatory mitigation would be proposed which would off-set the impacts due to the physical construction of the project. In some cases, complementary habitat creation might serve dual purposes (e.g. created emergent marsh might function as both habitat for delta smelt, as well as compensatory mitigation for physical impacts to emergent marsh habitat). However, all mitigation proposed as compensatory mitigation would be subject to specific success criteria, success monitoring, long-term preservation, and long-term maintenance and monitoring pursuant to the requirements of the Mitigation Rule.

All compensatory mitigation shall fully replace lost function through the mechanisms discussed below which will result in restoration and/or creation of habitat with at least as much function and value as those of the impacted habitat. In some cases, the mitigation habitat will afford significantly higher function and value than that of impacted habitat.

Compensation ratios, which are developed by the Corps, are driven by type, condition, and location of replacement habitat as compared to type, condition and location of impacted habitat. Compensatory mitigation usually includes restoration, creation, or rehabilitation of aquatic habitat. The Corps does not typically accept preservation as the only form of mitigation; use of preservation as mitigation typically requires a very high ratio of replacement to impact. It is anticipated that ratios will be a minimum of 1:1, depending on the factors listed above.

Compensatory mitigation will consist of restoration, creation, and/or rehabilitation of aquatic habitat. Typically, impacted habitat will be replaced in-kind, although impacts to some habitat types such as agricultural ditches, conveyance channels, and Clifton Court Forebay, will be mitigated out-of-kind with higher functioning habitat types such as riparian wetland, marsh, and/or seasonal wetland. Compensatory mitigation shall be accomplished by one, or a combination of the following methods:

- Purchase credits for restored/created/rehabilitated habitat at an approved wetland mitigation bank;
- On-site (adjacent to the project footprint) restoration or rehabilitation of wetlands converted to uplands due to past land use activities (such as agriculture) or functionally degraded by such activities;
- On-site (adjacent to the project footprint) creation of aquatic habitat;
- Off-site (within the Delta) restoration or rehabilitation of wetlands converted to uplands due to past land use activities (such as agriculture) or functionally degraded by such activities;
- Off-site (within the Delta) creation of aquatic habitat; and/or
- Payment into the Corps' Fee-in-Lieu program.

Purchase of Credits or Payment into Fee-in-Lieu Program

It is envisioned that purchase of bank credits and/or payment into a fee-in-lieu program will be utilized for habitat types that would be difficult to restore or create within the Delta. An example is vernal pool habitat, which requires an intact hardpan or other impervious layer and very specific soil types. Banks utilized for compensatory mitigation would be agency-approved and have a service area which included the area of the impacted habitat type. The fee-in-lieu program would be that of the Corps. It is anticipated that only a small amount of compensatory mitigation will fall into these categories.

On-Site Restoration, Rehabilitation and/or Creation

Much of the Delta consists of degraded or converted habitat that is more or less functioning as upland. Opportunities will be sought where on-site restoration, rehabilitation, and/or creation could occur immediately adjacent to the project footprint. It is anticipated that some of the compensatory mitigation will fall into this category.

Off-Site Restoration, Rehabilitation and/or Creation

There exists, within the immediate vicinity of the project area, Delta land which has been subject to agricultural practices or other land uses which have degraded or even converted wetlands that existed historically. Sites within the Delta will be evaluated for their restoration, rehabilitation, and/or creation potential. It is anticipated that most of the compensatory mitigation will fall into this category.

Impacts Resulting from the Construction of Compensatory Mitigation

The restoration, rehabilitation, and/or creation of aquatic habitat during the construction of the compensatory mitigation will result in relatively minor environmental impacts. Expected impacts include noise and air quality during construction, the conversion of upland to aquatic habitat, and potential changes to existing channel hydraulics where levees will be breached or lowered to create weirs.

IV. NHPA Section 106

Overview

The National Historic Preservation Act (NHPA), 16 U.S.C. §§ 470a to 470w-6, is the primary federal law governing the preservation of cultural and historic resources in the United States. The law establishes a national preservation program and a system of procedural protections which encourage the identification and protection of cultural and historic resources of national, state, tribal and local significance. Primary components of the act include:

- Articulation of a national policy governing the protection of historic and cultural resources.
- Establishment of a comprehensive program for identifying historic and cultural resources for listing in the National Register of Historic Places.
- Creation of a federal-state/tribal-local partnership for implementing programs established by the act.
- Requirement that federal agencies take into consideration actions that could adversely affect historic properties listed or eligible for listing on the National Register of Historic Places, known as the Section 106 Review Process.
- Establishment of the Advisory Council on Historic Preservation, which oversees federal agency responsibilities governing the Section 106 Review Process.
- Placement of specific stewardship responsibilities on federal agencies for historic properties owned or within their control (Section 110 of the NHPA).

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by ACHP. Revised regulations, "Protection of Historic Properties" (36 CFR Part 800), became effective August 5, 2004, and are summarized below.

The responsible Federal agency first determines whether it has an undertaking that is a type of activity that could affect historic properties. Historic properties are properties that are included in the National Register of Historic Places or that meet the criteria for the National Register. If so, it must identify the appropriate State Historic Preservation Officer/Tribal Historic Preservation Officer (SHPO/THPO) to consult with during the process. It should also plan to involve the public, and identify other potential consulting parties. If it determines that it has no undertaking, or that its undertaking is a type of activity that has no potential to affect historic properties, the agency has no further Section 106 obligations.

Programmatic Agreement (PA)

USACE, as the federal lead agency for CWA Section 404 permitting the water conveyance facility, is responsible for Section 106 compliance. When a project is complex, such that the normal Section 106 review process is not appropriate, the Section 106 implementing regulations (36 CFR 800.14(b)) allow for the development of a programmatic agreement (PA) to ensure Section 106 compliance. Relative to the currently proposed conveyance facility, preparation of a PA is applicable when effects on historic properties cannot be fully determined prior to approval of an undertaking (36 CFR 800.14(b)(1)(ii)), or when nonfederal parties are delegated major decision-making responsibilities (36 CFR 800.14(b)(1)(iii)).

USACE, in collaboration with DWR, is developing a draft Section 106 PA for the conveyance facility. The PA provides for the identification of historic properties within the Area of Potential Effect (APE) of the selected Project alternative prior to construction initiation, and the development of avoidance, protection, or mitigation measures for those historic properties that could be adversely affected by the Project. Treatment plans will be prepared to address impacts to NRHP-eligible archaeological, built environment, and Traditional Cultural Property (TCP) resources within the APE. The PA details how many of the day-to-day responsibilities for Section 106 compliance are delegated to DWR by USACE.

Tribal Consultation

An important element of the PA involves consultation with Native American tribes and members of the public who have a demonstrated interest in the undertaking, as required under 36 CFR 800.2(c)(2) and 36 CFR 800.2(d), respectively. Native American tribes are those tribal entities who are federally recognized (36 CFR 800.16(m)). Native American

tribes who have not received federal recognition, or individuals of Native American descent who are not affiliated with any tribal organization, are considered members of the interested public, as are other entities such as historical societies, local governments, or businesses and individuals. The PA ensures that USACE will fully involve federally recognized tribes at a government-to-government level throughout the Section 106 process. Similarly, the PA delegates responsibility for consultation with tribes and individuals without federal recognition to DWR.

Participation in the Section 106 process by Native American tribes or individuals with an ancestral affiliation with the Project area is described in the PA. Native Americans will be invited to participate in the development and implementation of the terms of the PA, including inventory reports, evaluation plans and reports, and during the resolution of adverse effects through the development of treatment plans for those resources within the APE that are either exclusively or partially affiliated with prehistoric or ethnographic resources. Participation may take place during public meetings, at meetings organized only for Native American tribes as a group, or at meetings with single tribes or individuals; meetings may be informal or may be identified as formal government-to-government consultations, depending on the participants involved. Native American tribes, both federally recognized and those without federal recognition, and with individuals with a demonstrated ancestral tie to the project area will be invited to be concurring parties to the PA. However, these entities are not required to be concurring parties in order to participate in the processes described in the PA, and they may request to become concurring parties at any time during the process.

V. Navigation (Rivers and Harbors Act Section 10)

A. Summary and References to Information and Analysis Contained in the Draft EIR/EIS and the RDEIR/SEIS

Potential navigation effects are discussed throughout the Draft EIR/EIS and RDEIR/SEIS in several chapters. Please refer to the impact discussions listed below for additional information.

All Alternatives

- Draft EIR/EIS Section 3.6.1, *Water Conveyance Facility Components*, includes a description of water conveyance facility components including intakes, operable barriers, barge fleeting facilities and operation, and forebays, including a discussion of the potential impacts of these components to navigation. Notably, this section concludes that the Sacramento River would remain navigable during construction of the intakes under each of the various alternatives.
 - See DEIR/EIS Chapter 3, *Alternatives*, page 3-83 to 3-121
 - See DEIR/EIS Chapter 3, *Alternatives*, page 3-92 (discusses impacts to navigation during intake construction)

Alternative 4A

Impacts associated with Alternative 4A are analyzed in RDEIR/SEIS Section 4, *Alternatives 4A, 2D, and 5A*. This section includes analyses of the potential effect of Alternative 4A on navigation as it relates to recreation and transportation.

Section 4.1.11, Recreation

- **Impact REC-3: Result in Long-Term Reduction of Recreational Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities**
 - See RDEIR/SEIS Pages 4-967 to 4-968
- **Impact REC-7: Result in Long-Term Reduction in Water-Based Recreation Opportunities as a Result of Maintenance of the Proposed Water Conveyance Facilities**
 - See RDEIR/SEIS Page 4-973
- **Impact REC-10: Result in Long-Term Reduction in Boating-Related Recreation Opportunities as a Result of Implementing Environmental Commitments 3–4, 6–7, 9–12, and 15–16**
 - See RDEIR/SEIS Page 4-22

Section 4.3.15, Transportation

- **Impact TRANS-4: Disruption of Marine Traffic during Construction**
 - See RDEIR/SEIS Page 4-1010 to 4-1011

B. Supplemental Description of Potential Effects to Navigation for Alternative 4A

1. Facilities Description

Under Alternative 4A, water conveyance facilities would be constructed and maintained identically to those proposed and analyzed under Alternative 4 (including the modifications described in Section 3, *Alternative 4: Conveyance Facility Modifications*). Water would primarily be conveyed from the north Delta to the south Delta through pipelines/tunnels. Water would be diverted from the Sacramento River through three fish-screened intakes on the east bank of the Sacramento River between Clarksburg and Courtland (Intakes 2, 3, and 5). Water would travel from the intakes to a sedimentation basin before reaching the tunnels. From the intakes water would flow into an initial single-bore tunnel, which would lead to an intermediate forebay on Glannvale Tract. From the southern end of this forebay, water would pass through an outlet structure into a dual-bore tunnel where it would flow by gravity to the south Delta. Water would then reach pumping plants northeast of the Clifton Court Forebay, where it would be pumped into the north cell of the expanded Clifton Court Forebay from the tunnels. The forebay would be dredged and redesigned to provide an area isolating water flowing from the new north Delta facilities from water diverted from south Delta channels.

A new pumping facility would be constructed northeast of the north cell of the expanded Clifton Court Forebay, along with control structures to regulate the relative quantities of water

flowing from the north Delta and the south Delta to the Banks and Jones Pumping Plants. Alternative 4A would entail the continued use of the SWP/CVP south Delta export facilities.

All aspects of water conveyance facility design, construction, and maintenance would be identical to those described for Alternative 4 in the revised text in Chapter 3, Sections 3.4, 3.5.9, and 3.6.1 and Appendix 3C, in Appendix A, *Revisions to the Draft EIR/EIS*.

A map and a schematic diagram depicting the conveyance facilities associated with Alternative 4A are provided in Mapbook Figure 3-4 and Figure 3-10. As noted previously, water conveyance facilities would be constructed and maintained identically to those proposed and analyzed under Alternative 4.

2. Potential Effects to Navigation

This analyses is based on the following documents: *Preliminary Estimates of Sediment Load at Proposed DHCCP Intakes (June 28, 2012) Revision 2*. California Department of Water Resources; *DHCCP Intake Study: Preferred Intake Technology* (January 2011). California Department of Water Resources; *Technical Memorandum – Initial Intake Hydraulic Analyses* (April 15, 2010). California Department of Water Resources. This analysis is also based on, and is meant to supplement, information provided in the Draft EIR/EIS and RDEIR/SEIR, including the sections and pages cited above under Section A, Summary and References to Information and Analysis Contained in Draft EIR/EIS.

a. Potential Effects to Surface Elevations Caused by Intakes

i) During Construction

Construction for Intakes 2, 3, and 5 will be accomplished using coffer dams at each location. Coffers dams will isolate each construction area from the Sacramento River and will be used to de-water the construction area. Intakes and screens have been designed and located on-bank to minimize changes to river flow characteristics. Nevertheless, some localized water elevation changes will occur upstream and adjacent to each coffer dam at these intake sites due to facility location within the river. These localized surface elevation changes will not exceed an increase of 0.10 feet at any intake location even at high river flows (when surface elevation changes would be expected to be highest). This represents the highest surface upstream elevation increase after coffer dam removal and during intake operation. Because this maximum increase in elevation is entirely localized, downstream surface elevation changes during intake construction would be insignificant and changes to river depth and width at any location will be insignificant. As a result, boat passage and river use, including Sacramento River tributaries, will not be affected.

NEPA Effects: Water surface changes and potential impacts associated with intake construction are not considered adverse to navigation.

CEQA Conclusion: Because it does not involve a physical change in the environment, effects to navigation caused by changes in surface water elevation, by themselves, are not considered environmental impacts under CEQA. Any secondary physical environmental impacts

that may result are covered under other impacts. Nonetheless, as explained above, changes in surface water elevation during construction of the intakes will not have a significant impact on navigation.

ii) During Operation

The hydraulic modeling scenario for this analysis included five intakes because that is the maximum number of intakes included under any alternative. The modeling also assumed the highest North Delta diversion capacity allowed under any alternative. Alternatives with fewer intakes and/or lower diversion capacity, such as Alternative 4A (three intakes and 9,000 cfs maximum diversion capacity), would have less effects to surface water elevations. With respect to Alternative 4A, operation of Intakes 2, 3 and 4 may have localized effects on water surface elevation during certain operational regimes and at various river flows. While intake operations and pumping levels are dictated by many factors, Sacramento River diversions are limited during low flows by operational rules. The nature and extent of impacts caused by diversions at an intake are dependent in large part on the location of the intake on the river. To minimize the intake effects on river surface elevations, intakes were designed as on-bank structures and were placed so that river flood and flow characteristic will be minimally altered. Based on hydrologic modelling, even at the lowest river flows (taking into account both seasonal and tidal variations) and at maximum intake operation (full diversions at each of five alternative intakes), estimates are that boat draft depths of at least 16.5 feet will be maintained within the Sacramento River. *Planning and Design of Navigation Locks* United States Army Corps of Engineers, EM 1110-2-2602 (September 30, 1995) pages 3-8. This river depth has occurred historically and has been adequate to support navigation along the Sacramento River. Additionally, under these same intake divisions/river flows, water surface elevations would be lowered by no more than 0.7 feet, which represents a localized and maximum estimate. Surface elevations downstream of the intakes would be affected less, and during higher river flow and lower intake diversions, river depths would be greater than the minimum estimate.

The minimal changes in surface water elevation anticipated under Alternative 4A, even assuming a maximum lowering of 0.7 feet, would not likely expose any currently unexposed natural or man-made features that would affect or impeded. There would be no new snags or obstructions that would impede navigation.

Moreover, even when operating at maximum capacity, the intakes would not alter flows in a way that would affect commercial vessels or recreational watercraft. The intakes are designed to ensure pumping velocities will have minimal impacts to aquatic species. It is unlikely that changes in flow velocity would be perceptible to operators of marine vessels or recreational watercraft and would have no effect on navigation.

NEPA Effects: Water surface changes and potential impacts associated with intake operation are not considered adverse. Water depth and surface elevations will not be significantly effected (either localized or downstream of the intake structures) and will therefore not have an adverse effect on navigation.

CEQA Conclusion: Because it does not involve a physical change in the environment, effects to navigation caused by changes in surface water elevation, by themselves, are not considered environmental impacts under CEQA. Any secondary physical environmental impacts that may result are covered under other impacts. Nonetheless, as explained above, changes in surface water elevation during operation of the intakes will not have a significant impact on navigation.

b. Potential Effects on Navigation Caused by Sedimentation

i) Facility Construction

(a) Intakes

Construction for Intakes 2, 3, and 5 will be accomplished using coffer dams at each location. Cofferdams will isolate each construction area from the Sacramento River and will be used to de-water the construction area. Construction of coffer dams would require sheet pile driving that would result in incremental suspension of bed sediments. These effects would be temporary and would not have an effect on navigation. Sheet piles at the edge of the levee embankment would likely change eddy currents locally, but rock slope in the transition zone would limit those currents and potential changes to bed load dynamics. As a result, erosion and sedimentation into the Sacramento River during intake construction would be minimal.

Moreover, potential sedimentation effects will be further minimized by limiting the duration of in-water construction activities and through implementing the environmental commitments described in Appendix 3B, *Environmental Commitments*, including the commitment to *Develop and Implement Erosion and Sediment Control Plans* to control short-term and long-term erosion and sedimentation effects and to restore soils and vegetation in areas affected by construction activities following construction. This commitment is related to Avoidance and Minimization Measure (AMM) 4, *Erosion and Sediment Control Plan*, described in BDCP Appendix 3.C. It is anticipated that multiple erosion and sediment control plans will be prepared for construction activities, each taking into account site-specific conditions such as proximity to surface water, erosion potential, drainage, etc. The plans will include all the necessary state requirements regarding erosion control and will implement BMPs for erosion and sediment control that will be in place for the duration of construction activities.

Implementation of Mitigation Measure SW-4 (Implement Measures to Reduce Runoff and Sedimentation) will further ensure that impacts from sedimentation are minimal.

NEPA Effects: Construction of coffer dams and intake construction would not have an adverse effect on navigation through increased sedimentation and erosion/deposition in the navigable channel.

CEQA Conclusion: Because it does not involve a physical change in the environment,

effects to navigation caused by changes in sedimentation, by themselves, are not considered environmental impacts under CEQA. Any secondary physical environmental impacts that may result are covered under other impacts. Nonetheless, as explained above, changes in sedimentation during construction of the intakes will not have a significant impact on navigation.

(b) Barge Facilities

Under Alternative 4A, five temporary barge landings would be constructed at locations adjacent to construction work areas for the delivery of construction materials. Each of the five proposed barge landings would include in-water and over-water structures, such as piling dolphins, docks, ramps, and possibly conveyors for loading and unloading materials; and vehicles and other machinery. Construction of the five barge landings would involve piles at each landing.

To address potential erosion and sedimentation impacts from barge facility construction associated with Alternative 4A, the project proponents will ensure that a Barge Operations Plan is developed and implemented for facility construction. The requirements for the Barge Operations Plan are described in Draft EIR/EIS Appendix 3B, *Environmental Commitments*. This commitment is related to AMM7, *Barge Operations Plan*, described in BDCP Appendix 3.C. This plan will be developed and submitted by the construction contractors per standard DWR contract specifications. Erosion control measures during construction activities at project locations are provided in Appendix 3B, *Environmental Commitments*, as noted above in the discussion of the intakes. Fleeting facilities will be either docking facilities built through pile and wharves or loaded and unloaded using landward positioned cranes. In either case, through AMM7 and the Environmental Commitments, impacts to sedimentation through construction related activities will be localized and minimal.

Implementation of Mitigation Measure SW-4 (Implement Measures to Reduce Runoff and Sedimentation) will further ensure that impacts from sedimentation are minimal.

NEPA Effects: Construction and operation of the barge facilities under Alternative 4A would not have an adverse effect on navigation.

CEQA Conclusion: Because it does not involve a physical change in the environment, effects to navigation caused by changes in sedimentation, by themselves, are not considered environmental impacts under CEQA. Any secondary physical environmental impacts that may result are covered under other impacts. Nonetheless, as explained above, changes in sedimentation from the temporary barge facilities will not have a significant impact on navigation.

(c) Clifton Court Forebay

Clifton Court Forebay would be dredged and redesigned to provide an area where water flowing from the new north Delta facilities will be isolated from water diverted from south Delta

channels. While Clifton Court Forebay is a “navigable water,” use of the forebay is limited to maintenance operations and is not open to commercial or recreational navigation.

NEPA Effects: Since Clifton Court Forebay is not open to navigation, there is no effect.

CEQA Conclusion: No impact.

ii) During Operations

(a) Intakes

Sediment loads are present in the Sacramento River as bed loads or distributed within the water column. The Sacramento River is sediment “starved” for most of the year since upstream reservoirs act as settling basins for suspended sediments. In most cases, sediment load is concentrated on the river bed and this bed load depends on several factors including particle size, particle density and flow velocity. To exclude bed loads from entering intake structures during operation, design criteria for the intakes require that the lowest point of the screen is placed above the river bed in such a way that there is no change in bed sediment erosion/distribution patterns. Additionally, screen locations for this alternative are placed on the outer bends of the river to minimize scour, erosion and sediment loading at those locations. Flow control baffles at intakes would be adjusted to control sedimentation near the screens as needed and air jets at screens are proposed to re-suspend sediments as needed.

Implementation of Mitigation Measure SW-4 (Implement Measures to Reduce Runoff and Sedimentation) will further ensure that impacts from sedimentation are minimal.

NEPA Effects: Operational criteria and design specifications for intake operations will result in no change to water column or bed load sediment dynamics. Erosion and deposition patterns will change little if any during intake operation. As a result, there will be no adverse effect on navigation either near or downstream of the intake locations.

CEQA Conclusion: Because it does not involve a physical change in the environment, effects to navigation caused by changes in sedimentation, by themselves, are not considered environmental impacts under CEQA. Any secondary physical environmental impacts that may result are covered under other impacts. Nonetheless, as explained above, changes in sedimentation during operation of the proposed intakes will not have a significant impact on navigation.

c. Potential Navigation Impacts from Construction and Operations of Head of Old River Barrier

Alternative 4A proposes work at the Head of Old River including the construction of fish and flow control gates as well as a small boat lock to allow recreational boat passage. An analysis of potential impacts of this work on navigation was completed in 2005 by Jones and Stokes (*South Delta Improvements Program Vol I: Environmental Impact*

Statement/Environmental Impact Report. Draft. October. (J&S 020533.02.) State Clearinghouse #2002092065. Sacramento, CA.) (“SDIP EIS/EIR”). The SDIP EIS/R analyzed whether the proposed barrier/gates facility and locks would cause a change in south Delta flows or water level, river flows or surface water elevations that would result in substantial changes to existing recreational or commercial boating activity and opportunities.

The changes in access to Delta waterways by boats and other vessels during construction and operation of the gates, during channel dredging activities, and attributable to changes in water levels/depths were addressed. Most of the waterways in the immediate project vicinity are public waterways navigable by recreational craft, including rowboats, large houseboats, and cabin cruisers. These waterways are also navigable by smaller commercial vessels, including towing and salvage vessels, clamshell dredges, dredges for repair and maintenance of levees and channels, and pile-driving vessels. Boat access points in the project area include River’s End Marina, located on the south side of the DMC, at the confluence with Old River; Tracy Oasis Marina Resort, located on the east side of Tracy Boulevard and the north side of Old River; and possibly at Heinbockle Harbor, located at Tracy Boulevard, on the south side of Grant Line/Fabian and Bell Canal.

According to a California Department of Parks and Recreation (DPR) survey, minimal boat launching and use occurs in the project area. The channels within the project area are too small to accommodate large commercial vessels, and because the channels are also part of an existing temporary barriers project, larger vessels cannot use these channels when the barriers are in place. A boat lock at the proposed facility would ensure boat access upstream of the gate regardless of gate operations. In this regard, upstream boat access could improve over current conditions. Additionally, from June 16 through September 30, the gates will be open and no boat lock operations will be necessary.

With respect to both recreational and commercial navigation, and based on analysis provided in the SDIP EIS/EIR, boat access impacts during facility construction will be less than significant (p. 5.8-14, 5.8-18, 5.8-21), impacts to navigation caused by water level changes during barrier operation will be less than significant (p. 5.8-15, 5.8-19, 5.8-22), impact to non-recreational boaters due to temporary dredging operation will be less than significant (p. 5.8-16, 5.8-19, 5.8-22), and impacts on recreation as a result of constructing and operating any of the alternatives will not be significant (p. 7.4-1).

Construction of the operable barrier could result in increased sedimentation near the gates. Maintenance dredging around the gate would be necessary to clear out sediment deposits. Dredging around the gates would be conducted using a sealed clamshell dredge. Depending on the rate of sedimentation, maintenance would occur every 3 to 5 years. A formal dredging plan with further details on specific maintenance dredging activities will be developed prior to dredging activities. Guidelines related to dredging activities, including compliance with in-water work windows and turbidity standards are described further in Appendix 3B, *Environmental Commitments*, under *Disposal and Reuse of Spoils, Reusable Tunnel Material (RTM), and Dredged Material*. These activities would ensure that sedimentation would not result in an adverse impact to navigation.

NEPA Effect: With respect to construction and operations of the Head of Old River Barrier, Alternative 4A would have no adverse effect on either commercial or recreational navigation activities.

CEQA Conclusion: Because it does not involve a physical change in the environment, effects to navigation, by themselves, are not considered environmental impacts under CEQA. Any secondary physical environmental impacts that may result are covered under other impacts. Nonetheless, as explained above, construction and operations of the Head of Old River barrier will not have a significant impact on navigation.

d. Potential Cumulative Effects on Navigation

As explained above and with respect to the construction and operation of these facilities, Alternative 4A would not result in an adverse effects to navigation due to water level elevation changes or altered sedimentation patterns. It is highly unlikely that other projects would combine with these impacts of the project to result in cumulative effects on navigation. This is because the minimal effects of these elements of the project on navigation are localized and would combine only with probable future projects if the projects were located immediately adjacent to the project components. There are no other reasonably foreseeable projects proposed to be located near or adjacent to the planned Alternative 4A facilities.

NEPA Effect: Alternative 4A in combination with other reasonably foreseeable projects would not have a cumulatively adverse effect on navigation.

CEQA Conclusion: Because it does not involve a physical change in the environment, effects to navigation, by themselves, are not considered environmental impacts under CEQA. Any secondary physical environmental impacts that may result are covered under other impacts. Nonetheless, as explained above, Alternative 4A in combination with other reasonably foreseeable projects would not have a cumulatively significant impact on navigation.

VI. Compliance with Section 408